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Interpretation of Nonverbal Communication by
Individuals Exhibiting Schizotypal Traits

A Thesis

Presented to

The Faculty of the Department of Psychology
The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree of
Master of Arts

by

Cecilia Puccini

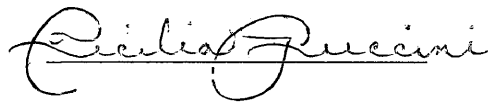
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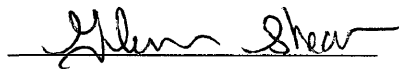
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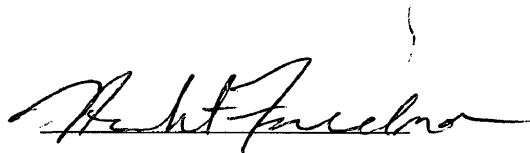
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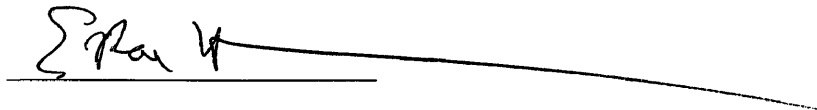
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Herb Friedman, Ph.D.

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E. Rae Harcum, Ph.D.

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ABSTRACT

Meehl (1962, 1989, 1990) proposed the existence of a predisposition for schizophrenia, which he termed schizotypy, that is marked by anhedonia, magical thinking, and perceptual aberrations. Based on his assumptions, the Chapmans and their colleagues developed the Physical Anhedonia Scale, the Social Anhedonia Scale, the Perceptual Aberration Scale, and the Magical Ideation Scale in order to differentiate between "normal" individuals and those who may be predisposed to schizophrenia. All four of these scales, along with an Infrequency Scale, were administered to 262 undergraduate psychology students; individuals whose scores were within the top and bottom 25% of the Chapman scales viewed the Profile of Nonverbal Sensitivity (PONS) which measures an individual's sensitivity to nonverbal communication. A 2x4x3 (Gender x Groups x PONS Subscales) ANOVA was computed to determine if there were any significant differences in nonverbal sensitivity between high or low scorers on the Chapman scales. The results yielded a significant main effect for Group $F(3,168) = 2.81, p < .04$, a significant effect for PONS Subscale $F(2,168) = 6.52, p < .002$, and a significant interaction between gender and group $F(1,168) = 6.00, p < .001$. However, they appear to be attributable to the significant differences between genders on the Social and Physical Anhedonia Scales rather than any true differences in nonverbal sensitivity. The results indicate, in fact, that differences in nonverbal sensitivity do not exist between schizotypic and non-schizotypic individuals.

INTERPRETATION OF NONVERBAL COMMUNICATION BY
INDIVIDUALS EXHIBITING SCHIZOTYPAL TRAITS

Interpretation of Nonverbal Communication by Individuals Exhibiting Schizotypal Traits

Meehl (1962, 1989, 1990) proposed that individuals exhibiting signs of schizotypy, a personality variable that predisposes the occurrence of a schizophrenic episode, can be underscored by anhedonia, magical thinking, and perceptual aberrations. Based on Meehl's and Rado's (cited in Chapman, Chapman & Raulin, 1976) suggestions that anhedonia is a defect in schizophrenics and schizotypes, Chapman et al., (1976) developed the Physical Anhedonia Scale. The anhedonia characteristic associated with schizotypy is a marked, life-long characterological defect in the ability to experience pleasure (Chapman et al., 1976). It is differentiated from the temporary anhedonia associated with depression in that it is prevalent throughout the individual's development and is believed to inhibit the healthy development of sexual functioning, reduces zest for life, impairs the ability to relate to others and weakens the feelings of joy, affection, love, pride and self-respect (Chapman et al., 1976).

In addition to the Physical Anhedonia scale, the Chapmans developed four scales designed to identify at-risk individuals within a normal population, based on Meehl's (1962) theory. They developed a Social Anhedonia Scale (Eckblad, Chapman, Chapman & Mishlove, 1982), designed to measure social withdrawal; the Perceptual Aberration Scale (Chapman, Chapman & Raulin, 1978) which tests for odd or distorted perceptions about the self; and the

Magical Ideation Scale (Eckblad & Chapman, 1983), which assesses beliefs that by conventional standards are invalid, such as the validity of lucky talismans. These scales have been used with high school and college populations (Bernstein & Riedel, 1987; Lowrie & Raulin, 1990; Martin & Chapman, 1983) and have been shown to be useful in identifying individuals who exhibit premorbid characteristics similar to those of clinically diagnosed schizophrenics.

These four scales are believed to tap subtypes of schizotypy, with the Physical and Social Anhedonia scales correlating positively with each other and the Magical Ideation and Perceptual Aberration scales also correlating positively with one another. Negative correlations between the anhedonia scales and the Perceptual Aberration and Magical Ideation scales support the claim that they identify different aspects of schizotypy.

The usefulness of schizotypy scales, designed to assess deviancy in non-psychotic populations, is supported by Bentall, Jackson & Pilgrim (1988a, 1988b) who profess that schizophrenia is not a valid object of scientific research because studies utilizing psychotic populations are inherently flawed. Studies that look at correlations between exams of schizophrenic symptoms and hospitalized schizophrenics will, of course, yield high correlations between the factors under study because they're using extreme groups – comparing psychotic individuals against "normals" (Slade & Copper, in Bentall et al., 1988a). Any significant differences observed between groups, therefore, are

suspect in light of the fact that there are very obvious differences between these populations.

Bentall et al. (1988a, 1988b) advocate research into the multi-dimensional schizotypal classification, supporting the development of the Chapman Scales. They argue that it is important to look at symptoms found in a wide range of subjects and not just those located in psychotic populations. Persons (1986) also argues in favor of more symptom-oriented research because it provides the following advantages:

- (1). Avoids diagnosis and classification problems.
- (2). Looks at phenomena usually ignored.
- (3). Facilitates theoretical development.
- (4). Recognizes that clinical phenomena are related to normal behavior.

Similarly, Hewitt & Claridge (1989) and Lowrie & Raulin (1990) advocate the use of schizotypy scales on a normal population rather than the study of clinical populations as compared with "normals." The use of schizotypy scales allows the identification of high-risk individuals from a general population, an approach consistent with Meehl's (1962) diathesis/stress model of schizophrenia which states that, although there appears to be a genetic predisposition for schizophrenia (schizotaxia), it is a necessary but not sufficient cause for the development of full-blown schizophrenia. Rather, environmental stressors are necessary for the manifestation of psychotic episodes.

Affective variables such as apathy, poor peer relationships, seclusiveness or withdrawal, and flattened affect appear to greatly increase the likelihood of psychosis. Genetic predisposition (schizotaxia), coupled with a lack of both the social skills and support necessary to successfully cope with environmental stressors, may result in a psychotic episode. One of the factors believed to be associated with affective deficits underlying schizotypy is childhood development in a restrictive environment. In this situation, the individual's needs were undifferentiated from the parents' needs, resulting in a double-bind where there is verbal expression of one thing or emotion, while another is expressed nonverbally. For instance, a mother or father may tell a child that they're loved, yet push that child away when they try to approach the parent.

The primary, or verbal communication in the above scenario expresses one thing while the metacommunication (i.e., gestures, tone of voice) indicates another. Bateson (cited in Shean, 1978) proposes that it is the metacommunication that defines the true nature of the communication. However, because the child is regularly exposed to these conflicting messages, he or she comes to accept all communication as incongruent and responds accordingly, often ignoring the nonverbal cues (Colussy & Zuroff, 1985; Shean, 1978). The ability to form cognitive schemata and to categorize stimulus events according to them enables the individual to interact successfully with the environment, to vary behavior with stimulus events, and to represent

symbolically those events to oneself in order to communicate them with others.

Affective pattern recognition is therefore the process by which the individual extracts emotional meaning from the behavior of others.

Colussy and Zuroff (1985) conducted an experiment in which they exposed schizophrenic inpatients, depressed patients and normal hospital employees (all female) to four videotapes, each depicting a different combination of messages in the verbal and nonverbal channels. They presented female schizophrenic inpatients, depressed patients, and normal controls to videotapes with congruent and incongruent verbal and nonverbal behaviors in order to rate how well they responded to mixed messages. They found that schizophrenics were less influenced by the nonverbal channel than the normal controls but not less than the depressed subjects.

Similar findings were obtained by Reilly & Muzeraki (1979). They exposed male schizophrenic inpatients, disturbed children, and normal children, to a set of videotapes in which an actress' positive or negative verbal statements were paired with incongruent nonverbal behavior. They found, as did Colussy & Zuroff, that schizophrenic subjects were less attentive to nonverbal cues than normals.

Although the research cited has focused on comparing normal individuals with schizophrenic patients, in general, it has been theorized that schizotypal individuals experience many of the same family patterns as those exhibiting schizophrenic symptoms. It seems logical, therefore, to postulate

that individuals evidencing schizotypal traits should demonstrate greater difficulty in interpreting nonverbal cues than "normals." The four Chapman scales will be used in this study to assess whether individuals scoring in the upper limits that are indicative of schizotypy (2 SD above the mean) differ on their sensitivity to nonverbal communication from individuals whose scores fall in the lower ranges. It is hypothesized that individuals who demonstrate a possible schizotypy will be less sensitive to nonverbal cues than those whose scores fall within the "normal" range. This hypothesis is based on the double-bind theory of schizophrenic development and is extendable to the concept of schizotypy, which has also been postulated to be related to interpersonal communication deficits.

In order to assess sensitivity to nonverbal cues, the Profile of Nonverbal Sensitivity (PONS) will be used (Rosenthal, Hall, DiMatteo, Rogers & Archer, 1979). The PONS is a 45-minute videotape depicting one interpreter (female) in eleven different scenes. Unlike standard nonverbal investigations utilizing still photos (Siegman & Feldstein, 1985; Spear, 1972), the PONS shows the interpreter interacting with an off-camera individual, thereby increasing its face validity. Although the authors acknowledge that the PONS is limited by the fact that the scenes are acted rather than natural and there is a gender-bias on the part of the interpreter, they assert that the bias is negligible and that the disadvantages are off-set by the control they gained over the scenes (Rosenthal et al., 1979).

The PONS presents a multi-channel approach to the study of nonverbal communication, an approach that is favored because of the ability it provides to assess different aspects of nonverbal communication (Siegmén & Feldstein, 1985). Preliminary studies conducted by McGhie (cited in Rosenthal et al., 1979) and Meiselman (1973) with a clinical population show that, overall, normal subjects were more accurate than those in the clinical group in reading nonverbal communications. Psychiatric patients are also less likely to profit from the addition of further channels of nonverbal information than normals and are especially impaired when required to process information from two sense modalities simultaneously. Rosenthal et al. (1979) found that schizophrenic individuals did not show any improvement in their interpretations of the PONS scenes when the first half of the PONS test was compared to the second half. Marked improvement, however, was shown by the control group.

It is expected that, in accordance with previous research, there will be a high positive correlation between Social Anhedonia and Physical Anhedonia as well as between Magical Ideation and Perceptual Aberration. Negative correlations are expected between Social Anhedonia, Magical Ideation and Perceptual Aberration and between Physical Anhedonia, Magical Ideation and Perceptual Aberration. Based on the hypothesized relationship between schizophrenia and schizotypy, it is also expected that individuals with low scores on the Chapman scales will perform significantly better on the overall PONS and each of its four subscales than individuals with high scores on the

Chapman scales. In accordance with Rosenthal et al.'s (1979) research, individuals with low schizotypy scores should show improvement in their ability to correctly identify nonverbal communication as measured by the PONS whereas no improvement in this ability is expected for individuals with high schizotypy scores.

Method

Subjects

A composite questionnaire comprised of the Magical Ideation, Perceptual Aberration, Social Anhedonia, and Physical Anhedonia subscales, including 13 infrequency items, was given to 262 introductory psychology students. Eleven subjects were eliminated due to incomplete questionnaires or a high (2 or more items) score on the infrequency subscale, resulting in a total of 251 subjects, 169 females and 82 males. The infrequency items were used to test for social desirability, lying, and careless scale completion and were suggested for use with the Chapman Scales by Chapman & Chapman (personal communication). These items consisted of statements such as: "I find that I walk with a limp which is a result of a skydiving accident;" and "Every year, I visit a Norwegian or Scandinavian Country."

Of the 251 subjects completing the Chapman scales, 66 individuals, 52 females and 14 males, were chosen to view the PONS videotape based on their scores on the Chapman scales. Composite scores were obtained by adding together the scores for the Physical and Social Anhedonia scales and for the Magical Ideation and Perceptual Aberration scales. A median split was then used to divide subjects into one of four groups: High SOC-PHY – High MID-ABR; High SOC-PHY – Low MID-ABR; Low SOC-PHY – Low MID-ABR; or Low SOC-PHY – High MID-ABR.

Materials

The Profile of Nonverbal Sensitivity (PONS) is a videotape of 220 two-second segments of a female encoder's nonverbal behavior (Rosenthal et al., 1979). It is approximately 45 minutes long and is divided into four nonverbal channels: (1). the face; (2). the body, from the neck to the knees; (3). the entire figure; (4). voice-only presentation, comprised of content-filtered speech without a visual image. The filtered speech, utilized throughout the tape, has been altered through the use of two different techniques: randomized spliced voice (RS), a randomized scrambling of the speaker's taped voice, or content-filtered voice (CF), an electronic manipulation through which the high frequencies that help identify specific words are removed, leaving the tone of the spoken words identifiable. There are 60 items each for the face, body, and figure channels, and 40 items for the voice-only channel.

The encoder on the PONS test is shown expressing 20 different affective or emotional situations. The scenes range from relatively subtle emotions to more dramatic affects and are separated into four main categories: positive-submissive, positive-dominant, negative-submissive, and negative-dominant (see Appendix A for script of scenes). Each of the 20 scenes appears eleven times, once in each of the eleven channels, in random order.

The classification of the scenes into each of the four domains was verified by groups of four to thirty English college students, who rated each scene on three dimensions: positive affect, dominance, and intensity. Five scenes were then selected for each quadrant, with the degree of agreement for

positivity of $n = .79$, $F(1, 16)=26.68$. The degree of correlation for dominance was $n = .67$, $F(1,16)=13.24$.

Subjects viewed the tape and tried to identify each scene through the use of a 220-item multiple choice test (see Appendix B). The viewer chose one of two alternate descriptions, one of which was correct, for the item just seen and/or heard.

The PONS was normed on 480 high school students, both males and females, who attended school on the East Coast, the West Coast, and the Midwest of the United States. The average total accuracy for all students was 77.29%, demonstrating that their accuracy was above chance but without ceiling effects. The internal consistency measures for all except the none-video channel with randomized spliced voice have robust reliability measures of .79 and higher. The voice-only channel had an internal consistency of only .06. A test-retest reliability measure, performed on college students, yielded an overall reliability of .41.

The scoring of the PONS yields an overall score, and also yields four subscale scores for each of the channels. Correct responses receive 1 point, incorrect responses receive 0 points, and omitted items receive .5 points (chance). To obtain a channel score, the points are totaled for each subscale, and all the items are added to obtain an overall score.

Chapman Scales

The Physical and Social Anhedonia and the Magical Ideation and

Perceptual Aberration Scales consist of true/false items. The Physical Anhedonia Scale has a reliability of .74 for males and .66 for females; the Social Anhedonia Scale has a reliability .85 for males and .82 for females. The Physical Anhedonia and Social Anhedonia Scales have a positive correlation between them of .60 for males and .51 for females, based on a normal standardization. The high correlation between the scales can be explained, in part, by the inability to extract physical sensations from the social anhedonia statements (Chapman et al., 1976).

The Magical Ideation and Perceptual Aberration Scales are also positively correlated at .68 for males and .71 for females (Eckblad & Chapman, 1983). Test-retest reliability for the Perceptual Aberration Scales was .75 for males and .76 for females (Chapman, Chapman & Edell, 1980). Coefficient alpha for the Magical Ideation Scale yielded a score of .82 for males and .85 for females (Eckblad & Chapman, 1983).

The Magical Ideation and Perceptual Aberration Scales correlate negatively with the Physical Anhedonia Scale. The correlation between perceptual aberration and physical anhedonia is $-.19$ for males and $-.09$ for females (Chapman, et al., 1980). Similarly, the correlation of the Magical Ideation and Physical Anhedonia scales is $-.29$ for males and $-.15$ for females (Eckblad & Chapman, 1983).

Procedure

To ensure the inclusion of individuals with high scores on Chapman et.

al's Physical and Social Anhedonia, Magical Ideation, and Perceptual Aberration Scales (usually less than 10% of a population), a 35-item composite scale, comprised of random items from each of these scales, was distributed in the mass testing questionnaire. The composite scale also included 5 infrequency or social acceptability items (i.e., "I have had nightmares every night for the past month"). Anyone answering two or more of the infrequency items in a positive manner was not eligible to participate in this study. To ensure the anonymity of subjects, each questionnaire was coded and scored by a research assistant. Individuals scoring in the top 25% or low 25% on the composite scale were contacted and asked to complete the full scales. Selected subjects were given the complete version of the above-mentioned Chapman et al. scales (see Appendices D, E, F, and G).

Following completion of the Chapman scales, subjects participated in the second part of the experiment, which involved administration of the PONS (see Appendix B for the full PONS answer sheet and Appendix C for the verbal instructions). Subjects were run in groups of approximately 10 – 20 individuals at a time; individuals were able to view the screen and hear the videotape well from any position in the room.

Results

Separate Pearson Product-Moment correlation analyses were run for males and females on each of the Chapman Scales in order to ascertain whether or not the subject population was comparable to the norms established

by Chapman et al. (1976, 1980) and Eckblad & Chapman (1983). The correlations between Social and Physical Anhedonia scales for females was $r = .286$, lower than the correlation obtained by Chapman et al. (1976). There was a positive correlation of $r = .647$ between Magical Ideation and Perceptual Aberration for females, consistent with Eckblad & Chapman's (1983) findings. As expected, the correlation between Magical Ideation and Physical Anhedonia was $r = -.099$, and the relationship between Perceptual Aberration and Physical Anhedonia was also negative, with $r = -.139$. These negative correlations indicate that Magical Ideation, Perceptual Aberration and the Anhedonia scales measure different personality dimensions as proposed by Chapman et al. (1976) and Eckblad & Chapman (1983). The correlation for females between Magical Ideation and Social Anhedonia was $r = .299$, and between perceptual Aberration and Social Anhedonia $r = .332$. The correlations between the schizotypy scales obtained for females in this study, along with those reported by Chapman, are represented in Table 1.

Insert Table 1 about here

For males, the correlations between Social and Physical Anhedonia was also high and positive, $r = .514$, as was the relationship between Magical Ideation and Perceptual Aberration, $r = .695$. These correlations are similar to Chapman et al.'s (1976) results of $r = .60$ for Social and Physical Anhedonia

and $r = .68$ for Magical Ideation and Perceptual Aberration. Consistent with Eckblad & Chapman's (1983) results for males, a negative correlation of $r = -.131$ between Magical Ideation and Physical Anhedonia, and $r = -.180$ between Perceptual Aberration and Physical Anhedonia were obtained. Social Anhedonia yielded a correlation of $r = .211$ with Magical Ideation, and $r = .261$ with Perceptual Aberration. The correlations for males from this study as well as those obtained by Chapman et al. (1976, 1980) and Eckblad & Chapman (1983) are presented in Table 2.

Insert Table 2 about here

Females group means ($n=170$) for each of the Chapman Scales were: $M = 6.8$ for Social Anhedonia; $M = 7.0$ for Physical Anhedonia; $M = 10.0$ for Magical Ideation; and $M = 7.4$ for Perceptual Aberration. For males ($n=81$), mean scores were: Social Anhedonia $M = 8.3$; Physical Anhedonia $M = 10.7$; Magical Ideation $M = 8.5$; and Perceptual Aberration $M = 8.0$. The results for males and females on the both Social and Physical Anhedonia reflect the same patterns obtained by Chapman et al. (1976), with males exhibiting more anhedonia symptoms than females, with highly significant differences occurring between males and females on the Physical Anhedonia scale (Chapman et al., 1976; Eckblad & Chapman, 1983).

Similarly, females in this study scored higher on the Magical Ideation scale than males, in accordance with Eckblad & Chapman's results (1983). Perceptual Aberration scores obtained by Eckblad & Chapman (1983) suggest that males score lower than females on this scale, unlike the results from this study, which indicate a slightly higher score for males than females; however, an independent groups t-test did indicated non-significant differences between males and females on the Perceptual Aberration scale. Significant differences were obtained between males and females for Social Anhedonia $t(247) = .02$ and Physical Anhedonia $t(247) = .0001$. Group means are summarized in Table 3 and Figure 1.

Insert Table 3 about here

Insert Figure 1 about here

In accordance with Chapman & Chapman's recommendations (personal communication), two combined scores, one for Social and Physical Anhedonia (SOC-PHY), and another for Magical Ideation and Perceptual Aberration (MID-ABR) were obtained by adding individual scale scores together. Male and female subjects were then divided, on the basis of a median split, into four groups: High SOC-PHY – High MID-ABR; High SOC-PHY – Low MID-

ABR; Low SOC-PHY – Low MID-ABR; and Low SOC-PHY – High MID-ABR. Because of difficulties obtaining subjects, there are large disparities between the number of subjects in each cell, as indicated in Table 4.

Insert Table 4 about here

A 2x4x3 (Gender x Group x PONS Subscales) ANOVA was computed to determine if high or low scores on the Chapman scales influenced the subject's ability to correctly identify nonverbal communication as measured by the PONS. Although the PONS, in addition to an overall score, has four subscales: figure, body, face, and voice, only 3 of the 4 scales were used in the analysis. The subscale voice was omitted from this analysis because it contains only 40 items, 20 less than each of the other scales, making it inequitable with them. The ANOVA yielded a significant main effect for the Group $F(3,168) = 2.81, p < .04$, indicating that there was a significant difference on PONS performance between groups. A significant main effect was also obtained for PONS Subscale $F(2,168) = 6.52, p < .002$, suggesting that there were differences in the ability to interpret the PONS between subscales. A significant interaction was found between gender and group $F(1,168) = 6.00, p < .001$. This interaction, however, is attributable to the significant difference between genders on Social and Physical Anhedonia rather than the predicted interaction between gender and the PONS Subscales, which is non-significant, $F(2,168) = 1.23, p > .29$. The disparate number of subjects across cells, as shown in Table 4, indicated additional analyses with gender be dropped from subsequent evaluation.

A 4 x 3 (Group x PONS Subscale) ANOVA was then calculated, resulting in a significant main effect for subscale scores, $F(2,180) = 20.72$, $p < .0001$. This main effect suggests that there were differences in the ability to interpret nonverbal cues for the Body, Figure, and Face channels of the PONS. A Tukey's paired comparison test was used to test the subscale main effect. This yielded a significant difference between the Body and Figure Subscales, $M = 4.16$, $p < .0001$, and between the Body and Face Subscales, $M = 3.89$, $p < .0001$. Tukey's absolute mean differences for each of the subscale scores are presented in Table 5.

Insert Table 5 about here

The significant differences between the Body subscale and both the Face and Figure subscales suggests that the Body subscale, which depicts only the torso of the individual, assessed a different modality of nonverbal communication than did the Figure and Face subscales.

Two one-way ANOVAS were computed to determine if there were any significant differences between groups for the total PONS scale and for the Voice subscale. No significant differences were found, suggesting that there were no group effects on either the Voice subscale or the complete PONS test.

Based on Rosenthal et al.'s (1979) study, in which differences were observed between the first half and second half of the PONS Scale among

schizophrenic individuals, a one-way Repeated-measures ANOVA was run to determine if there were any significant differences between group scores on the first and second half of the PONS. No significant differences between groups were found, indicating that there was no improvement in accuracy over trials and no significant differences in improvement on the PONS between males and females and low and high scorers on the Chapman scales.

Because the difficulty obtaining subjects in the upper and lower percentiles of the Chapman Scales resulted in the use of a median-split for Chapman group classification rather than the indicated 2 SD above and below the mean, it was considered that the lack of significant differences on the PONS subscales and total PONS scores could be attributed to overlap between the low and high groups. In order to test this supposition, the top 10 and bottom 10 scores on the combined SOC-PHY scale and the MID-ABR scales, collapsed across gender, were used to run 5 separate *t*-tests for the PONS Face, Voice, Body, Figure, and Total scales. No significant differences between the high and low groups were found for any of the scales, indicating that individuals exhibiting schizotypal symptoms remain as sensitive to nonverbal cues as "normal" controls.

Discussion

The data support the hypothesis that the correlations between Physical Anhedonia, Social Anhedonia, Perceptual Aberration, and Magical Ideation will be similar to the relationships presented by Chapman et al. (1976, 1980) and

Eckblad & Chapman (1983). The significant differences between males and females on Social and Physical Anhedonia are also supported by Chapman et al. (1976) who suggest that, given the higher means for males, they should perhaps have higher cut-off points for anhedonia. Their failure to provide a quantitative marker for anhedonia for either males or females suggests that further research, establishing norms across several populations, should be conducted. Currently, Chapman et al. (1976, 1980) propose that 2 SD above the mean be used to identify highly anhedonia individuals; however, this method leads to a great amount of variance from population to population. A score which may be considered anhedonia in one instance may, given a different locale, be considered "normal," making the assertion of true schizotypy difficult to make.

The lack of a significant finding for groups may be attributable to the median-split utilized to categorize subjects on the Chapman Scales. Because of difficulty obtaining subjects that met the Chapman's criterion of deviancy as 2 SD above the mean (usually less than 5% of the population), a median-split was used. The lack of significant differences between groups could therefore be an artifact of a lack of true differentiation between groups, suggesting that future research should concentrate on obtaining larger population samples in order to ascertain that sufficient numbers of schizotypal subjects are available for comparison with individuals scoring in the lower percentile rankings for schizotypy. Although plausible, this explanation seems unlikely to be the sole

cause for the lack of difference in nonverbal sensitivity in light of the fact that t -tests between the two extremes on the combined SOC-PHY and MID-ABR scales revealed no significant differences between groups.

The lack of significant differences between the high and low SOC-PHY and MID-ABR groups suggests that schizotypes' perception of nonverbal sensitivity is comparable to that of "normal" subjects. The insignificant differences between groups could be attributed to failure of the Chapman Scales to correctly identify non-schizotypal and schizotypal individuals, although this possibility seems unlikely given the relatively high validity and reliability scores for each of the scales. The final, and most probable explanation for these findings is perhaps the most obvious: differences in nonverbal sensitivity between schizotypes and non-schizotypes are nominal and therefore unimportant. Although this conclusion seems inevitable given the results of this study, it may be premature and further studies need to be conducted before nonverbal communication is dropped from the schizotypy paradigm.

Also of interest for further study is the issue of gender differences. The low number of male subjects in each of the four Chapman Scale groups who completed the PONS necessitated the dropping of gender as a variable in the analysis of PONS scores. Gender differences, however, should not be discounted as a variable from future research as there is evidence that females perform significantly better than males on the interpretation of nonverbal cues

(Rosenthal et al., 1979). In particular, females are better able to interpret the Body subscale than males (Rosenthal et al., 1979), while no significant differences between genders were found for the Figure, Voice, or Face subscales.

Because of past research demonstrating significant differences in nonverbal interpretation between genders (Rosenthal et al., 1979) and the significant differences between genders on the Anhedonia Scales (Chapman et al., 1976), it seems reasonable to assume that there might be a significant interaction between these two factors that is not demonstrated by this study due to the low number of male subjects per cell. Studies with schizophrenic patients (Colussy & Zuroff, 1985; Reilly & Muzeraki, 1979; and Newman, 1977) show significant differences in the amount of attention paid to nonverbal cues between psychotic and normal populations. These differences suggest the possibility that schizotypes may also exhibit differences in their attendance to nonverbal cues that remain untapped by this study, again due to the lack of deviant subjects in each cell.

Unlike Rosenthal et al.'s (1979) study involving the PONS and individuals with psychotic symptoms, no significant differences between groups were found for the first and second half of the PONS, indicating that there was no improvement for groups in the ability to interpret nonverbal cues across time. The lack of significance can also be attributable to the problem with group differentiation. It may be that schizotypes also fail to improve in their

ability to interpret nonverbal cues across time as compared to normals, but these differences are not demonstrated in this study due to grouping effects.

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Table 1

Correlations between Chapman Scales for Females

	Chapman Results	Study Results
SOC-PHY	.51	.29
MID-ABR	.71	.65
SOC-MID	Not available	.30
SOC-ABR	Not available	.32
PHY-MID	-.15	-.10
PHY-ABR	-.09	-.14

SOC = Social Anhedonia; PHY = Physical Anhedonia

MID = Magical Ideation; ABR = Perceptual Aberration

Table 2

Correlations between Chapman Scales for Males

	Chapman Results	Study Results
SOC-PHY	.60	.51
MID-ABR	.68	.70
SOC-MID	Not available	.21
SOC-ABR	Not available	.26
PHY-MID	-.29	-.13
PHY-ABR	-.19	-.18

SOC = Social Anhedonia; PHY = Physical Anhedonia

MID = Magical Ideation; ABR = Perceptual Aberration

Table 3

Mean Scores by Gender on Social Anhedonia, Physical Anhedonia, Magical Ideation and Perceptual Aberration Scales

	Females		Males	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Social	6.8*	4.7	8.3*	5.6
Physical	7.0**	5.3	10.7**	6.6
M. Ideation	10.0	5.7	8.5	5.6
P. Aberration	7.4	7.4	8.0	8.0

* $p < .02$

** $p < .0001$

Table 4

Number of Subjects Per Chapman Scale Group

	Females	Males
High SOC-PHY- High MID-ABR	21	3
High SOC-PHY- Low MID-ABR	54	6
Low SOC-PHY- Low MID-ABR	42	9
Low SOC-PHY- High MID-ABR	36	21

Table 5

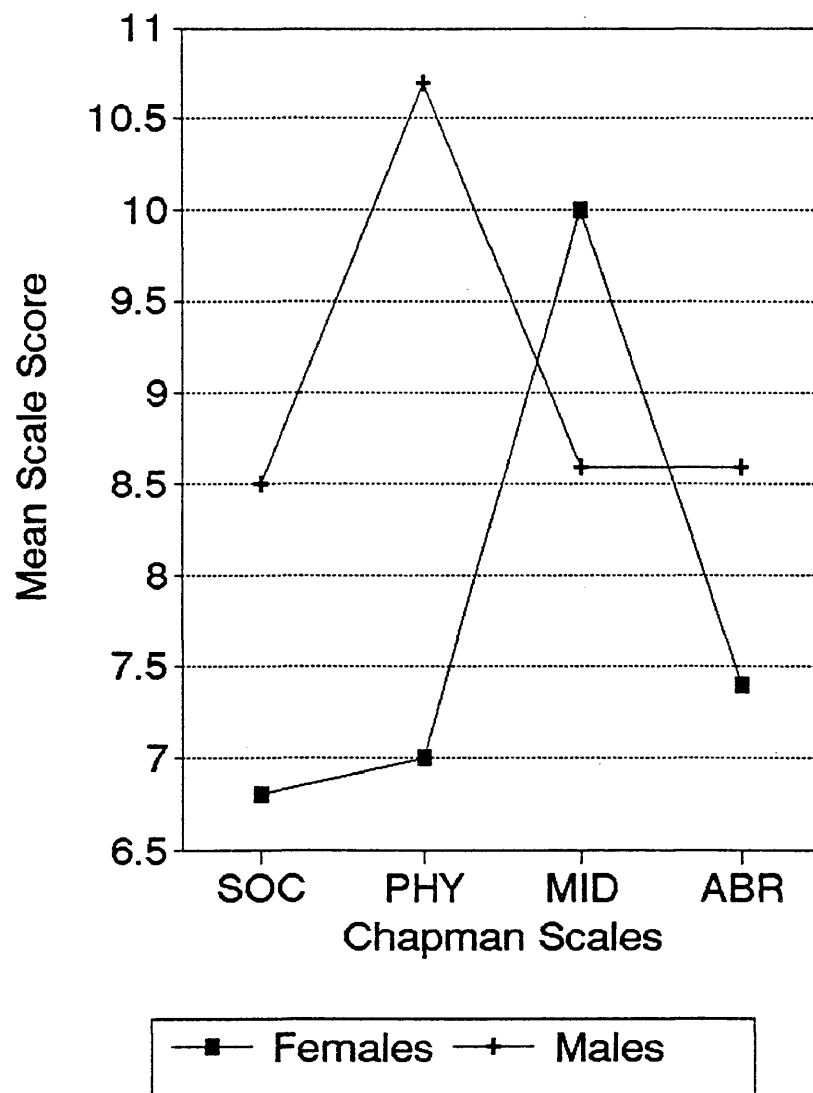
Tukey's Matrix of Absolute Mean Differences for PONS Subscales

	Body	Figure	Face
Body	0.00		
Figure	4.16*	0.00	
Face	3.89*	.26	0.00

* $p < .0001$

Figure Caption

Figure 1. Mean Scores by Gender for Social Anhedonia, Physical Anhedonia, Magical Ideation and Perceptual Aberration.



Appendix A

Transcript of Scenes for PONS

Positive-Submissive

1. "Oh, I'm sorry, we don't have that anymore. But I have something else that is very similar, and I think you might like it. Would you like to look?" (Helping a customer).
2. "I'd like a Danish pastry, please, and a cup of tea with cream, and a glass of milk, I guess. Thanks." (ordering food in a restaurant).
3. "Oh, thank you! I thought I'd lost that. I just can't thank you enough." (expressing gratitude)
4. "I love you. I think I'll always love you. I just want to do things with you and be with you." (expressing deep affection)
5. "Hey, don't go. I think we'll have a good time tonight if you stay." (trying to seduce someone)

Positive-Dominant

6. "I'm so excited! The wedding's next month, and we have all these flowers, and my dress, and all these invitations – it's just wonderful!" (talking about one's wedding)
7. "I'm sure I have everything I need. Now if I forget anything I'll call you. And I'll write you all the time." (leaving on a trip)
8. "Are you sure you're warm enough, dear? Why don't you put on a sweater? That's good. Have a good time." (expressing motherly love)
9. "Have you ever seen such a beautiful day? Did you know the flowers are out already down by the river?" (admiring nature)
10. "Oh, don't cry. Where do you live? Everything will be okay. Just tell me, what's your daddy's name?" (talking to a lost child)

Negative-submissive

11. "I just can't believe it – he had so much to live for and he was so young. It's just terrible." (talking about the death of a friend)

12. "Well, I'm sorry it had to happen, but we just couldn't get along and I think we're better off now. I'm just glad it's over with." (talking about one's divorce)
13. "I'm terribly sorry, but this clock I bought just doesn't work, at least it doesn't seem to. Could I exchange it?" (returning faulty item to store)
14. "I'm sorry said that. It sounded awful. I know how you must have felt. I'm so sorry." (asking forgiveness)
15. "Dear Lord, please guide us in our time of misery and help us to make the right decisions." (saying a prayer)

Negative-Dominant

16. "Where have you been? I've been waiting here for two hours. I just don't have all afternoon." (criticizing someone for being late)
17. "How many times have I told you not to leave things all over the house? It just make it a mess." (nagging child)
18. "I hate you! I just don't want anything to do with you- everything you do hurts me." (expressing strong dislike)
19. "Look, I've told you before, don't push me on that or I'll get you." (threatening someone)
20. "You took my husband! You took my husband and he was all I had. Give him back to me." (expressing jealous anger)

Appendix B

Profile of Nonverbal Sensitivity

1. A. Expressing jealous anger
 B. Talking to a lost child
2. A. Talking to a lost child
 B. Admiring nature
3. A. Talking about the death of a friend
 B. Talking to a lost child
4. A. Leaving on a trip
 B. Saying a prayer
5. A. Criticizing someone for being late
 B. Expressing gratitude
6. A. Helping a customer
 B. Expressing gratitude
7. A. Criticizing someone for being late
 B. Leaving on a trip
8. A. Talking about one's wedding
 B. Expressing gratitude
9. A. Talking about the death of a friend
 B. Talking about one's divorce
10. A. Talking about the death of a friend
 B. Trying to seduce someone
11. A. Talking to a child
 B. Helping a customer
12. A. Admiring nature
 B. Expressing motherly love
13. A. Expressing deep affection
 B. Nagging a child
14. A. Expressing motherly love

- B. Asking forgiveness
- 15. A. Admiring nature
B. Helping a customer
- 16. A. Admiring nature
B. Saying a prayer
- 17. A. Nagging a child
B. Admiring nature
- 18. A. Nagging a child
B. Criticizing someone for being late
- 19. A. Asking forgiveness
B. Leaving on a trip
- 20. A. Expressing gratitude
B. Leaving on a trip
- 21. A. Leaving on a trip
B. Returning faulty item to a store
- 22. A. Returning faulty item to a store
B. Talking about one's divorce
- 23. A. Expressing jealous anger
B. Talking about one's divorce
- 24. A. Talking about the death of a friend
B. Threatening someone
- 25. A. Expressing deep affection
B. Saying a prayer
- 26. A. expressing deep affection
B. Trying to seduce someone
- 27. A. Nagging a child
B. Expressing motherly love
- 28. A. Leaving on a trip
B. Ordering food in a restaurant

- 29. A. Helping a customer
B. Expressing jealous anger
- 30. A. Criticizing someone for being late
B. Expressing gratitude
- 31. A. Threatening someone
B. Talking about one's wedding
- 32. A. Admiring nature
B. Expressing strong dislike
- 33. A. Ordering food in a restaurant
B. Criticizing someone for being late
- 34. A. Leaving on a trip
B. talking about one's wedding
- 35. A. Talking to a lost child
B. Expressing strong dislike
- 36. A. Trying to seduce someone
B. Expressing jealous anger
- 37. A. Expressing strong dislike
B. Expressing deep affection
- 38. A. Leaving on a trip
B. Threatening someone
- 39. A. Expressing deep affection
B. Talking about the death of a friend
- 40. A. Talking to a lost child
B. Criticizing someone for being late
- 41. A. Ordering food in a restaurant
B. Expressing gratitude
- 42. A. Expressing motherly love
B. Threatening someone
- 43. A. Expressing strong dislike

- B. Ordering food in a restaurant
- 44. A. Expressing motherly love
B. Talking to a lost child
- 45. A. Expressing deep affection
B. Nagging a child
- 46. A. Asking forgiveness
B. Saying a prayer
- 47. A. Expressing motherly love
B. Helping a customer
- 48. A. Admiring nature
B. Expressing strong dislike
- 49. A. Expressing motherly love
B. Leaving on a trip
- 50. A. Talking about one's divorce
B. Ordering food in a restaurant
- 51. A. Asking forgiveness
B. Nagging a child
- 52. A. Admiring nature
B. Expressing motherly love
- 53. A. Returning fault item to a store
B. Criticizing someone for being late
- 54. A. Talking about one's wedding
B. Expressing deep affection
- 55. A. Expressing strong dislike
B. Ordering food in a restaurant
- 56. A. Admiring nature
B. Ordering food in a restaurant
- 57. A. Returning faulty item to a store
B. helping a customer

- 58. A. Expressing strong dislike
B. Expressing gratitude
- 59. A. Expressing deep affection
B. Expressing gratitude
- 60. A. Saying a prayer
B. threatening someone
- 61. A. Saying a prayer
B. Ordering food in a restaurant
- 62. A. Admiring nature
B. Asking forgiveness
- 63. A. Talking to a lost child
B. Expressing gratitude
- 64. A. Talking about one's wedding
B. Saying a prayer
- 65. A. Talking to a lost child
B. Threatening someone
- 66. A. Expressing motherly love
B. Nagging a child
- 67. A. Expressing motherly love
B. Nagging a child
- 68. A. Expressing gratitude
B. Expressing strong dislike
- 69. A. Expressing strong dislike
B. Talking about one's wedding
- 70. A. Helping a customer
B. Asking forgiveness
- 71. A. Threatening someone
B. Expressing motherly love
- 72. A. Nagging a child

- B. Talking to a lost child
- 73. A. Talking to a lost child
B. Criticizing someone for being late
- 74. A. Talking about one's divorce
B. Trying to seduce someone
- 75. A. Expressing jealous anger
B. Helping a customer
- 76. A. Talking about one's divorce
B. Expressing deep affection
- 77. A. Expressing gratitude
B. Talking to a lost child
- 78. A. Expressing deep affection
B. Asking forgiveness
- 79. A. Threatening someone
B. Nagging a child
- 80. A. Talking about the death of a friend
B. Trying to seduce someone
- 81. A. Talking about one's wedding
B. Talking about one's divorce
- 82. A. Trying to seduce someone
B. Criticizing someone for being late
- 83. A. Helping a customer
B. Admiring nature
- 84. A. Returning faulty item to a store
B. Nagging a child
- 85. A. Nagging a child
B. Leaving on a trip
- 86. A. Talking about one's wedding
B. Admiring nature

- 87. A. Criticizing someone for being late
B. Expressing deep affection
- 88. A. Admiring nature
B. Returning faulty item to a store
- 89. A. Asking forgiveness
B. Expressing strong dislike
- 90. A. Expressing motherly love
B. Helping a customer
- 91. A. Asking forgiveness
B. Leaving on a trip
- 92. A. Criticizing someone for being late
B. Helping a customer
- 93. A. Talking about one's wedding
B. Threatening someone
- 94. A. Expressing motherly love
B. Nagging a child
- 95. A. Expressing motherly love
B. Expressing gratitude
- 96. A. Talking about one's divorce
B. Trying to seduce someone
- 97. A. Expressing jealous anger
B. Asking forgiveness
- 98. A. Expressing motherly love
B. Criticizing someone for being late
- 99. A. Talking about one's divorce
B. Talking about the death of a friend
- 100. A. Expressing strong dislike
B. Asking forgiveness
- 101. A. Saying a prayer

- B. Helping a customer
- 102. A. Nagging a child
B. Leaving on a trip
- 103. A. Talking about one's divorce
B. Asking forgiveness
- 104. A. Ordering food in a restaurant
B. Expressing jealous anger
- 105. A. Criticizing someone for being late
B. Talking about the death of a friend
- 106. A. Talking about the death of a friend
B. Ordering food in a restaurant
- 107. A. Leaving on a trip
B. Nagging a child
- 108. A. Saying a prayer
B. Talking about one's divorce
- 109. A. Expressing strong dislike
B. Trying to seduce someone
- 110. A. Ordering food in a restaurant
B. Asking forgiveness
- 111. A. Talking about one's wedding
B. Leaving on a trip
- 112. A. Expressing deep affection
B. Admiring nature
- 113. A. Expressing jealous anger
B. Criticizing someone for being late
- 114. A. Talking about one's divorce
B. Threatening someone
- 115. A. Expressing strong dislike
B. Returning faulty item to a store

- 116. A. Ordering food in a restaurant
B. Threatening someone
- 117. A. Talking to a lost child
B. Criticizing someone for being late
- 118. A. Admiring nature
B. Nagging a child
- 119. A. Expressing strong dislike
B. Helping a customer
- 120. A. Talking about one's wedding
B. Ordering food in a restaurant
- 121. A. Expressing gratitude
B. Expressing motherly love
- 122. A. Leaving on a trip
B. Expressing deep affection
- 123. A. Nagging a child
B. Talking to a lost child
- 124. A. Returning faulty item to a store
B. Expressing motherly love
- 125. A. Talking about one's divorce
B. Admiring nature
- 126. A. Expressing deep affection
B. Talking about the death of a friend
- 127. A. Talking about one's divorce
B. Admiring nature
- 128. A. Expressing deep affection
B. Admiring nature
- 129. A. Talking to a lost child
B. Admiring nature
- 130. A. Returning faulty item to a store

- B. talking about the death of a friend
- 131. A. Talking about one's wedding
B. Talking about the death of a friend
- 132. A. Admiring nature
B. Leaving on a trip
- 133. A. Asking forgiveness
B. Helping a customer
- 134. A. Expressing strong dislike
B. Ordering food in a restaurant
- 135. A. Returning faulty item to a store
B. Talking about the death of a friend
- 136. A. Expressing deep affection
B. Saying a prayer
- 137. A. Saying a prayer
B. Criticizing someone for being late
- 138. A. Talking about one's wedding
B. Talking about one's divorce
- 139. A. Expressing gratitude
B. Expressing motherly love
- 140. A. Expressing jealous anger
B. Threatening someone
- 141. A. Asking forgiveness
B. Expressing motherly love
- 142. A. Admiring nature
B. Ordering food in a restaurant
- 143. A. Expressing motherly love
B. Expressing jealous love
- 144. A. Expressing jealous anger
B. Helping a customer

- 145. A. Ordering food in a restaurant
B. Returning faulty item to a store
- 146. A. Talking about one's divorce
B. Leaving on a trip
- 147. A. Nagging a child
B. Saying a prayer
- 148. A. Trying to seduce someone
B. Criticizing someone for being late
- 149. A. Expressing deep affection
B. Admiring nature
- 150. A. Talking about the death of a friend
B. Expressing motherly love
- 151. A. Expressing motherly love
B. Expressing strong dislike
- 152. A. Expressing deep affection
B. Returning faulty item to a store
- 153. A. Expressing gratitude
B. Threatening someone
- 154. A. Leaving on a trip
B. Talking to a lost child
- 155. A. Talking about the death of a friend
B. Expressing jealous anger
- 156. A. Helping a customer
B. Expressing gratitude
- 157. A. Asking forgiveness
B. Saying a prayer
- 158. A. Trying to seduce someone
B. Expressing gratitude
- 159. A. Expressing jealous anger

- B. Saying a prayer
- 160. A. Criticizing someone for being late
B. Helping a customer
- 161. A. Expressing strong dislike
B. Expressing deep affection
- 162. A. Expressing deep affection
B. talking about the death of a friend
- 163. A. Returning faulty item to a store
B. Leaving on a trip
- 164. A. Expressing gratitude
B. Expressing jealous anger
- 165. A. Talking about one's wedding
B. Trying to seduce someone
- 166. A. Talking to a lost child
B. Expressing jealous anger
- 167. A. Talking to a lost child
B. Talking about the death of a friend
- 168. A. Talking about one's divorce
B. Asking forgiveness
- 169. A. Trying to seduce someone
B. Threatening someone
- 170. A. Expressing gratitude
B. Expressing jealous anger
- 171. A. Talking about one's wedding
B. Criticizing someone for being late
- 172. A. Returning faulty item to a store
B. Expressing strong dislike
- 173. A. Expressing gratitude
B. Talking to a lost child

- 174. A. Expressing gratitude
B. Returning faulty item to a store
- 175. A. Expressing motherly love
B. Criticizing someone for being late
- 176. A. Ordering food in restaurant
B. Expressing jealous anger
- 177. A. Expressing gratitude
B. Returning faulty item to a store
- 178. A. Expressing strong dislike
B. Talking about one's divorce
- 179. A. Talking about one's divorce
B. talking about the death of a friend
- 180. A. Ordering food in a restaurant
B. Returning faulty item to a store
- 181. A. Expressing motherly love
B. Talking to a lost child
- 182. A. Trying to seduce someone
B. Talking about one's wedding
- 183. A. Leaving on a trip
B. Trying to seduce someone
- 184. A. Talking about the death of a friend
B. Asking forgiveness
- 185. A. Trying to seduce someone
B. Talking to a lost child
- 186. A. Expressing motherly love
B. ordering food in a restaurant
- 187. A. Saying a prayer
B. Expressing jealous anger
- 188. A. Trying to seduce someone

- B. talking about the death of a friend
- 189. A. Ordering food in a restaurant
B. Talking about the death of a friend
- 190. A. Helping a customer
B. Trying to seduce someone
- 191. A. Expressing motherly love
B. Criticizing someone for being late
- 192. A. Saying a prayer
B. Nagging a child
- 193. A. Talking to a lost child
B. Expressing deep affection
- 194. A. Talking about one's divorce
B. Returning faulty item to a store
- 195. A. Threatening someone
B. Helping a customer
- 196. A. Criticizing someone for being late
B. Talking about one's divorce
- 197. A. Expressing jealous anger
B. Nagging a child
- 198. A. Talking about one's wedding
B. Expressing jealous anger
- 199. A. Trying to seduce someone
B. Expressing deep affection
- 200. A. Threatening someone
B. Expressing strong dislike
- 201. A. Talking about one's wedding
B. Talking about the death of a friend
- 202. A. Talking about one's divorce
B. Talking about one's wedding

- 203. A. Threatening someone
B. Expressing strong dislike
- 204. A. Admiring nature
B. Criticizing someone for being late
- 205. A. Ordering food in a restaurant
B. Nagging a child
- 206. A. Expressing gratitude
B. Threatening someone
- 207. A. Talking about one's wedding
B. Saying a prayer
- 208. A. Admiring nature
B. Talking about the death of a friend
- 209. A. Trying to seduce someone
B. Saying a prayer
- 210. A. Talking about one's divorce
B. Threatening someone
- 211. A. Expressing deep affection
B. Trying to seduce someone
- 212. A. Saying a prayer
B. Talking about one's wedding
- 213. A. Leaving on a trip
B. Trying to seduce someone
- 214. A. Saying a prayer
B. talking to a lost child
- 215. A. Admiring nature
B. Talking about one's wedding
- 216. A. Expressing jealous anger
B. Criticizing someone for being late
- 217. A. Leaving on a trip

- B. Ordering food in a restaurant
- 218. A. Expressing strong dislike
B. Talking to a lost child
- 219. A. Expressing jealous anger
B. Saying a prayer
- 220. A. Asking forgiveness
B. Expressing gratitude

Appendix C

Verbal Instructions for PONS

The film and sound track you are about to witness was designed so that we may learn how well people can match facial expressions, body movements, and tones of voice to the actual situation in which the expressions, movements, and tones originally occurred.

You will see and hear a series of audio and video segments, and for each one you are to judge which of two real-life situations is represented by the segment you have just seen or heard. After each segment you will have a short period of time in which you record your judgment.

Some of the visual segments will have no sound track. Some of the visual segments will have a sound track, but you will not be able to understand the words. Instead, you will hear speech that has been change in various ways, so that you will be able to judge *only the tone of voice* in which something was said. Some of the segments will be made up of only these speech-altered portions of the sound track, and for these there will be no film to watch at all. In fact, the very first segment is like this.

Each segment you will see and/or hear has been numbered on the screen, and this number corresponds to a number on you answer sheet. Your answer sheet lists two brief descriptions of everyday life situations for each segment. One of these descriptions correctly describes the actual situation you will see and/or hear, while the other description does not describe accurately.

For each numbered segment, please circle the letter A or B next to the situation you believe to correspond to the segment you have just seen and/or heard.

When you see a number appear on the screen, please find the corresponding number on our answer sheet and place your finger just in front of the number, to keep your place. Watch and/or listen to the segment that follows the number, and as soon as the segment ends circle the letter A or B corresponding to the situation you believe the segment to have been based upon. Then look to the screen again promptly to find the next number flashed on the screen.

Many of the choices will be difficult, but you should choose one of the descriptions even though you may feel quite uncertain about the correct answer. Choose the more likely description for each segment even if you feel you might be guessing. Your guesses may be much more accurate than you would imagine. In fact, we request that you do not change any answers once you have made a choice. For every segment, then, do the best you can to judge accurately the situation upon which each segment is based. Your answer sheet contains a sample answer, which you should look at now.

All ready to start? Now we will begin.

Appendix D

Magical Ideation Scale

1. Some people can make me aware of them just by thinking about me.T
2. I have had the momentary feeling that I might not be human.T
3. I have sometimes been fearful of stepping on side-walk cracks.T
4. I think I could learn to read other's minds if I wanted to.T
5. Horoscopes are right too often for it to be just a coincidence.T
6. Things sometimes seem to be in different places when I get home, even though no one has been there.T
7. Numbers like 13 and 7 have no special powers.F
8. I have occasionally had the silly feeling that a TV or radio broadcaster knew I was listening to him.T
9. I have worried that people on other planets may be influencing what happens on earth.T
10. The government refuses to tell us the truth about flying saucers. T
11. I have felt that there were messages for me in the way things were arranged in a department store window.T
12. I have never doubted that my dreams are the product of my own mind.F
13. Good luck charms don't work.F
14. I have noticed sounds on my records that are not there at other times.T
15. The hand motions that strangers make seem to influence me at times.T
16. I almost never dream about things before they happen.F
17. I have had the momentary feeling that someone's place has been taken by a look-alike.T
18. It is not possible to harm others by simply thinking bad thoughts about

them.F

19. I have sometimes sensed an evil presence around me, although I could not see it.T

20. I sometimes have a feeling of gaining or losing energy when certain people look at me or touch me.T

21. I have sometimes had the passing thought that strangers are in love with me.T

22. I have never had the feeling that certain thoughts of mine really belonged to someone else.F

23. When introduced to strangers, I rarely wonder whether I have known them before.F

24. If reincarnation were true, it would explain some unusual experiences I have had.T

25. People often behave so strangely that one wonders if they are part of an experiment.T

26. At times I perform certain little rituals to ward off negative influences.T

27. I have felt that I may cause something to happen just by thinking too much about it.T

28. I have wondered whether the spirits of the dead can influence the living.T

29. At times I have felt that a professor's lecture was meant especially for me.T

30. I have sometimes felt that strangers were reading my mind.T

Appendix E

Chapman Scale for Physical Anhedonia

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| 1. | When I'm feeling a little sad, singing has often made me feel happier. | T F |
| 2. | Dancing, or the idea of it has always seemed dull to me. | T F |
| 3. | When eating a favorite food, I have often tried to eat slowly to make it last longer. | T F |
| 4. | I have always found organ music dull and unexciting. | T F |
| 5. | I have often enjoyed the feel of silk, velvet, of furs. | T F |
| 6. | I have had very little fun from physical activities like walking, swimming, or sports. | T F |
| 7. | I have sometimes enjoyed feeling the strength in my muscles. | T F |
| 8. | I have seldom enjoyed any kind of sexual experience. | T F |
| 9. | I have always loved having my back massaged. | T F |
| 10. | On hearing a good song, I have seldom wanted to sing along with it. | T F |
| 11. | Trying new food is something I have always enjoyed. | T F |
| 12. | I have always hated the feeling of exhaustion that comes from vigorous activity. | T F |
| 13. | When I have seen a statue, I have had the urge to feel it. | T F |
| 14. | The color that things are painted has seldom mattered to me. | T F |
| 15. | I have always had a number of favorite foods. | T F |

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| 16. | The sound of rustling leaves has never much pleased me. | T F |
| 17. | When I have walked by a bakery, the smell of fresh bread has often made me hungry. | T F |
| 18. | Sunbathing isn't really more fun than lying down indoors. | T F |
| 19. | I have often enjoyed receiving a strong, warm handshake. | T F |
| 20. | There just are not many things that I have ever really enjoyed doing. | T F |
| 21. | I have often found walks to be relaxing and enjoyable. | T F |
| 22. | I have never found a thunderstorm exhilarating. | T F |
| 23. | The sound of the rain falling on the roof has made me feel snug and secure. | T F |
| 24. | Sex is okay, but not as much fun as most people claim it is. | T F |
| 25. | I like playing and petting soft little kittens or puppies. | T F |
| 26. | The taste of food has always been important to me. | T F |
| 27. | The sound of organ music has often thrilled me. | T F |
| 28. | Beautiful scenery has been a great delight to me. | T F |
| 29. | The first winter snowfall has often looked pretty to me. | T F |
| 30. | I have sometimes danced with myself just to feel my body move with the music. | T F |
| 31. | I have seldom cared to sing in the shower. | T F |
| 32. | One food tastes as good as another to me. | T F |

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| 33. | On seeing a soft, thick carpet, I have sometimes had the impulse to take off my shoes and walk barefoot on it. | T F |
| 34. | After a busy day, a slow walk has often felt relaxing. | T F |
| 35. | The bright lights of a city are exciting to look at. | T F |
| 36. | The beauty of sunsets is greatly overrated. | T F |
| 37. | It has always made me feel good when someone I care for reaches out to touch me. | T F |
| 38. | I have usually found soft music boring rather than relaxing. | T F |
| 39. | I have usually finished my bath or shower as quickly as possible just to get it over with. | T F |
| 40. | The smell of dinner cooking has hardly ever aroused my appetite. | T F |
| 41. | I have never wanted to go on any of the rides at an amusement park. | T F |
| 42. | The warmth of an open fireplace hasn't especially soothed and calmed me. | T F |
| 43. | Poets always exaggerate the beauty and joys of nature. | T F |
| 44. | I don't understand why people enjoy looking at the stars at night. | T F |
| 45. | I have very little desire to try new kinds of foods. | T F |
| 46. | I never have the desire to take off my shoes and walk through a puddle barefoot. | T F |
| 47. | I've never cared much about the texture of food. | T F |

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| 48. | I have often felt uncomfortable when my friends touch me. | T F |
| 49. | Standing on a high place and looking out over the view is very exciting. | T F |
| 50. | When I pass by flowers, I have often stopped to smell them. | T F |
| 51. | Sex is the most intensely enjoyable thing in life. | T F |
| 52. | I think that kite flying is silly. | T F |
| 53. | I've never cared to sunbathe; it just make me hot. | T F |
| 54. | The sounds of a parade have never excited me. | T F |
| 55. | It has often felt good to massage my muscles when they are tired or sore. | T F |
| 56. | When I'm feeling a little sad, singing has often made me feel happier. | T F |
| 57. | A good soap lather when I'm bathing has sometimes soothed and refreshed me. | T F |
| 58. | A brisk walk has sometimes made me feel good all over. | T F |
| 59. | I have been fascinated with the dancing of flames in a fireplace. | T F |
| 60. | Flowers aren't as beautiful as many people claim. | T F |

Appendix F

The Perceptual Aberration Scale

- T F 1. I sometimes have had the feeling that some parts of my body are not attached to the same person.
- T F 2. Occasionally, I have felt as though my body did not exist.
- T F 3. Sometimes, people whom I know well begin to look like strangers.
- T F 4. My hearing is sometimes so sensitive that ordinary sounds become uncomfortable.
- T F 5. Often I have a day when indoor lights seem so bright that they bother my eyes.
- T F 6. My head or feet have never seemed far away.
- T F 7. I have sometimes felt confused as to whether my body was really my own.
- T F 8. Sometimes I have felt that I could not distinguish my body from other objects around me.
- T F 9. I have felt that my body and another person's body were one and the same.
- T F 10. I have felt that something outside my body was a part of my body.
- T F 11. I sometimes have had the feeling that my body is abnormal.
- T F 12. Now and then, when I look in the mirror, my face seems quite different than usual.
- T F 13. I have never had the passing feeling that my arms or legs have become longer than usual.
- T F 14. I have sometimes felt that some part of my body no longer belongs to me.
- T F 15. Sometimes when I look at things like tables and chairs, they seem strange.
- T F 16. I have felt as though my head or limbs were somehow not my own.
- T F 17. Sometimes, part of my body has seemed smaller than it usually is.
- T F 18. I have sometimes had the feeling that my body is decaying inside.

- T F 19. Occasionally it has seemed as if my body had taken on the appearance of another person's body.
- T F 20. Ordinary colors sometimes seem much too bright to me.
- T F 21. Sometimes I have had a passing thought that some part of my body was rotting away.
- T F 22. I have sometimes had the feeling that one of my arms or legs is disconnected from the rest of my body.
- T F 23. It has seemed at times as if my body was melting into my surroundings.
- T F 24. I have never felt that my arms or legs have momentarily grown in size.
- T F 25. The boundaries of my body always seem clear.
- T F 26. Sometimes I have had feelings that I am united with an object near me.
- T F 27. Sometimes I have had the feeling that a part of my body is larger than it usually is.
- T F 28. I can remember when it seemed as though one of my limbs took on an unusual shape.
- T F 29. I have had the momentary feeling that my body has become misshapen.
- T F 30. I have had the momentary feeling that the things I touch remain attached to my body.
- T F 31. Sometimes I feel like everything around me is tilting.
- T F 32. I sometimes have to touch myself to make sure I'm still there.
- T F 33. Parts of my body occasionally seem dead or unreal.
- T F 34. At times, I have wondered if my body was really my own.
- T F 35. For several days at a time, I have had such a heightened awareness of sights and sounds that I cannot shut them out.

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Appendix G

Social Anhedonia Scale

- T F 1. Having close friends is not as important as many people say.
- T F 2. I attach very little importance to having close friends.
- T F 3. I prefer watching television to going out with other people.
- T F 4. A car ride is much more enjoyable if someone is with me.
- T F 5. I like to make long distance phone calls to friends and relatives.
- T F 6. Playing with children is a real chore.
- T F 7. I have always enjoyed looking at photographs of friends.
- T F 8. Although there are things that I enjoy doing by myself, I usually seem to have more fun when I do things with other people.
- T F 9. I sometimes become deeply attached to people I spend a lot of time with.
- T F 10. People sometimes think that I am shy when I really just want to be left alone.
- T F 11. When things are going really good for my close friends, it makes me feel good too.
- T F 12. When someone close to me is depressed, it brings me down too.
- T F 13. My emotional responses seem very different from those of other people.
- T F 14. When I am home alone, I often resent people telephoning me or knocking on my door.
- T F 15. Just being with friends can make me feel really good.
- T F 16. When things are bothering me, I like to talk to other people about it.
- T F 17. I prefer hobbies and leisure activities that do not involve other people.
- T F 18. It's fun to sing with other people.
- T F 19. Knowing that I have friends who care about me gives me a sense of security.

- T F 20. When I move to a new city, I feel a strong need to make new friends.
- T F 21. People are usually better off if they stay aloof from emotional involvements with most others.
- T F 22. Although I know I should have affection for certain people, I don't really feel it.
- T F 23. People often expect me to spend more time talking with them than I would like.
- T F 24. I feel pleased and gratified as I learn more and more about the emotional life of my friends.
- T F 25. When others try to tell me about their problems and hangups, I usually listen with interest and attention.
- T F 26. I never had really close friends in high school.
- T F 27. I am usually content to just sit alone, thinking and daydreaming.
- T F 28. I'm much too independent to really get involved with other people.
- T F 29. There are few things more tiring than to have a long, personal discussion with someone.
- T F 30. It made me sad to see all my high school friends go their separate ways when high school was over.
- T F 31. I have often found it hard to resist talking to a good friend, when I have other things to do.
- T F 32. Making new friends isn't worth the energy it takes.
- T F 33. There are things that are more important to me than privacy.
- T F 34. People who try to get to know me better usually give up after a while.
- T F 35. I could be happy living all alone in a cabin in the woods or mountains.
- T F 36. If given the choice, I would much rather be with others than be alone.
- T F 37. I find that people too often assume that their daily activities and opinions will be interesting to me.
- T F 38. I don't really feel very close to my friends.

T F 39. My relationships with other people never get very intense.

T F 40. In many ways, I prefer the company of pets to the company of people.

VITA

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